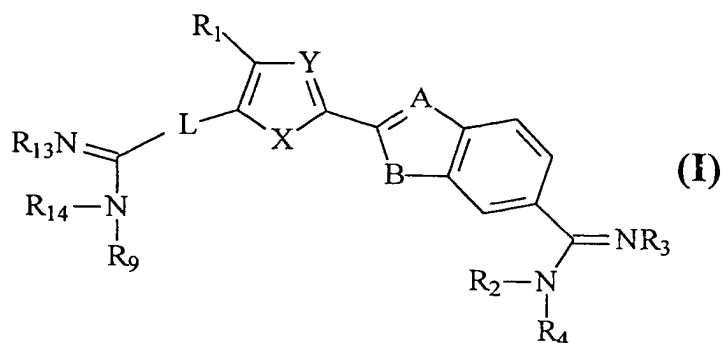


THAT WHICH IS CLAIMED IS:

1. A compound of Formula I:



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

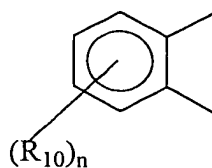
A is CH or N;

B is selected from the group consisting of NH, O or S;

R₁ is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylalkyl;

R₂ and R₉ are each independently selected from the group consisting of H, H₂, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

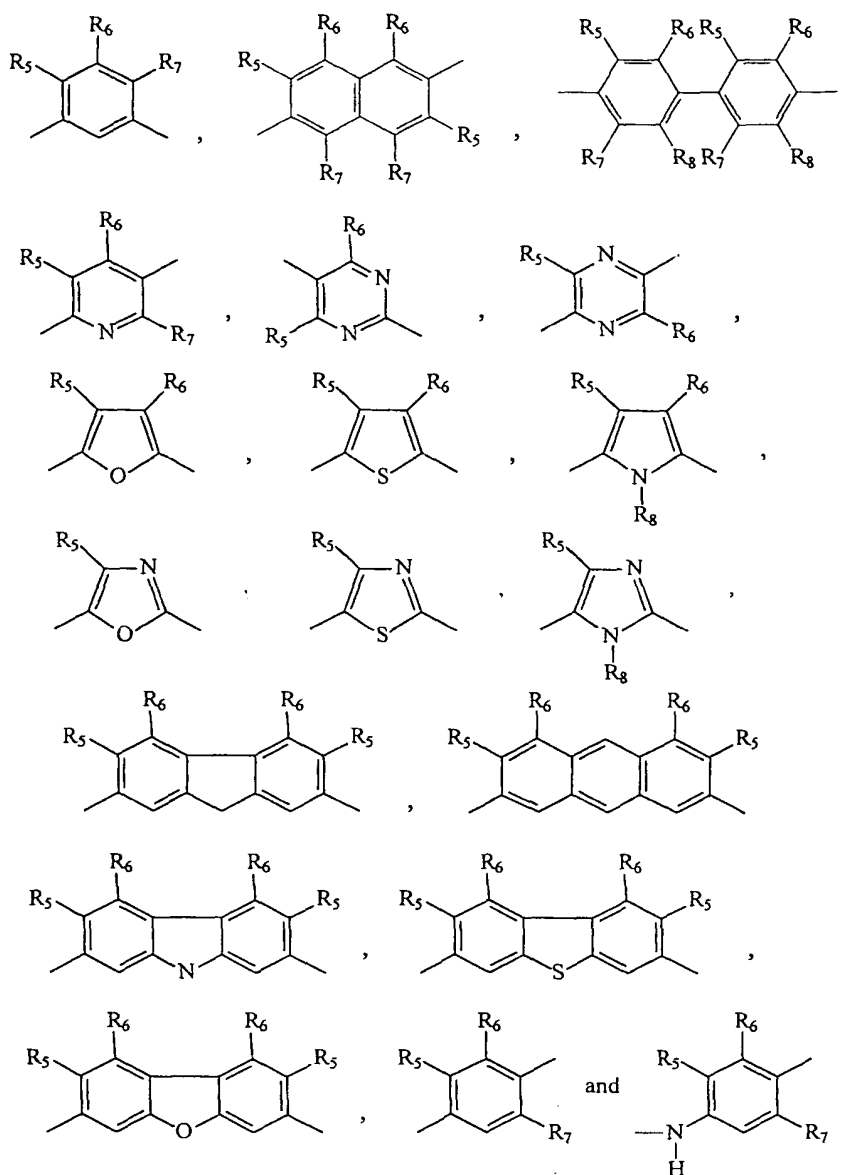
R₃, R₄, R₁₃ and R₁₄ are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R₃ and R₄ together or R₁₃ and R₁₄ together represent a C₂ to C₁₀ alkyl, hydroxyalkyl, or alkylene, or R₃ and R₄ together or R₁₃ and R₁₄ together are:



wherein n is a number from 1 to 3, and R₁₀ is H or -CONHR₁₁NR₁₅R₁₆, wherein

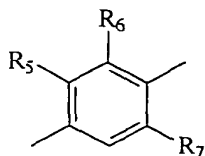
R₁₁ is lower alkyl and R₁₅ and R₁₆ are each independently selected from the group consisting of H and lower alkyl;

L is selected from the group consisting of:



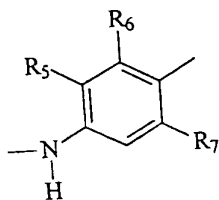
wherein R_5 , R_6 , R_7 , and R_8 are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; and wherein said compound of Formula I binds the minor groove of DNA as a dimer.

2. The compound of Formula I, wherein L is:



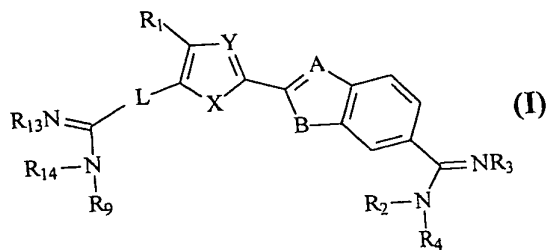
A is N, B is NH, X is O, Y is CH, R₁, R₂, R₄, R₅, R₆, R₇, R₈, R₉ and R₁₄ are each H, and R₃ and R₁₃ are each H₂.

3. The compound of Formula I, wherein L is:



A is N, B is NH, X is O, Y is CH, R₁, R₂, R₄, R₅, R₆, R₇, R₈, R₉ and R₁₄ are each H, and R₃ and R₁₃ are each H₂.

4. A method of binding mixed sequence DNA comprising contacting a sample DNA with a compound of Formula (I):



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

A is CH or N;

B is selected from the group consisting of NH, O or S;

R₁ is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylalkyl;

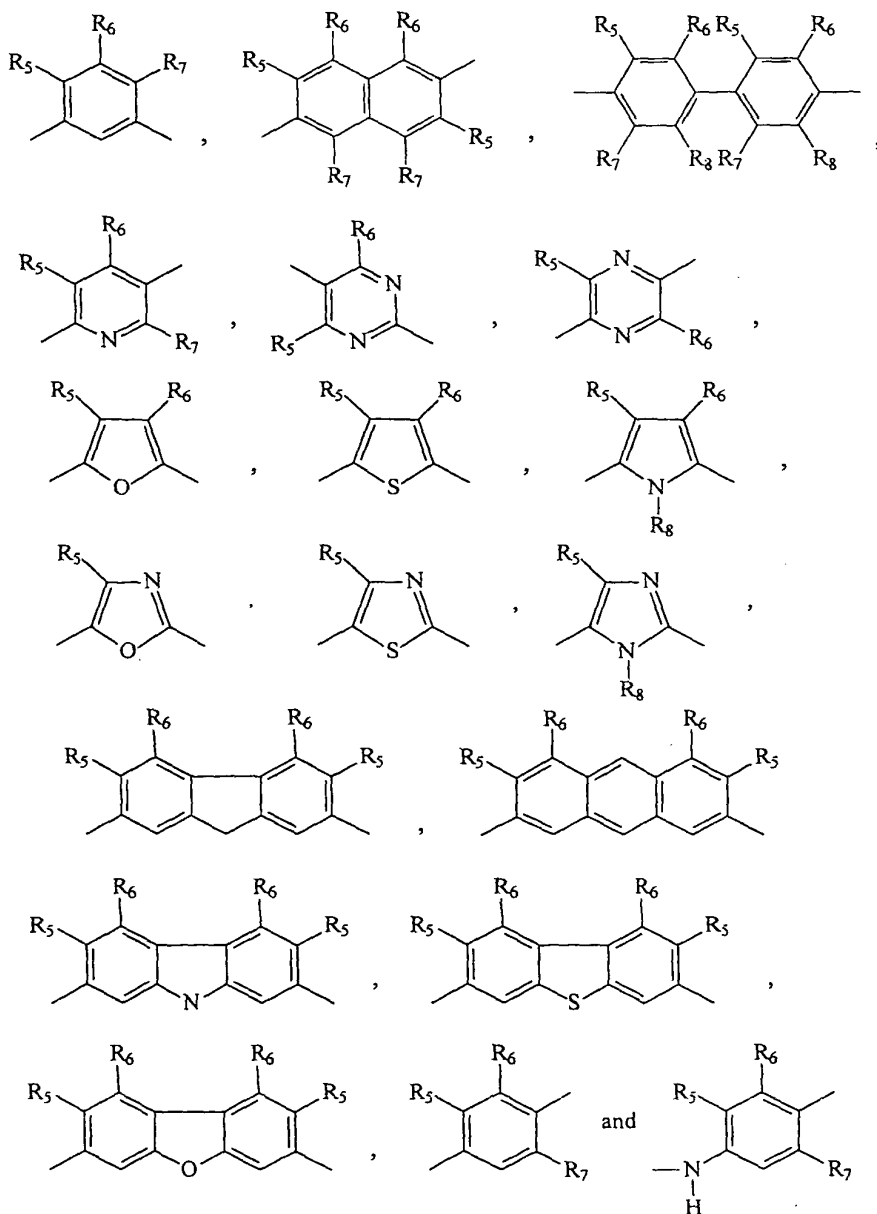
R₂ and R₉ are each independently selected from the group consisting of H, H₂, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

R₃, R₄, R₁₃ and R₁₄ are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R₃ and R₄ together or R₁₃ and R₁₄ together represent a C₂ to C₁₀ alkyl, hydroxyalkyl, or alkylene, or R₃ and R₄ together or R₁₃ and R₁₄ together are:



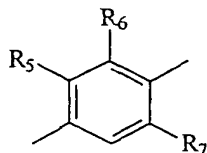
R₁₁ is lower alkyl and R₁₅ and R₁₆ are each independently selected from the group consisting of H and lower alkyl;

L is selected from the group consisting of:



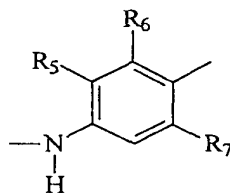
wherein R_5 , R_6 , R_7 , and R_8 are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; wherein said compound of Formula I binds the minor groove of DNA as a dimer.

5. The method of Claim 4 wherein L is:



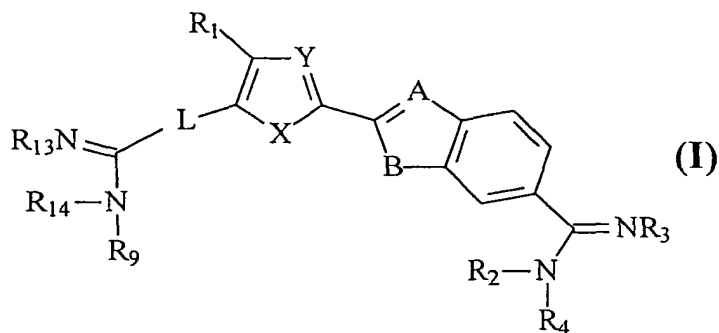
A is N, B is NH, X is O, Y is CH, R_1 , R_2 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 and R_{14} are each H, and R_3 and R_{13} are each H_2 .

6. The method of Claim 4, wherein L is:



A is N, B is NH, X is O, Y is CH, R_1 , R_2 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 and R_{14} are each H, and R_3 and R_{13} are each H_2 .

7. A method of detecting mixed sequence DNA comprising contacting a sample of DNA with a fluorescent compound of Formula (I):



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

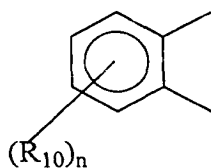
A is CH or N;

B is selected from the group consisting of NH, O or S;

R₁ is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyarylakyl;

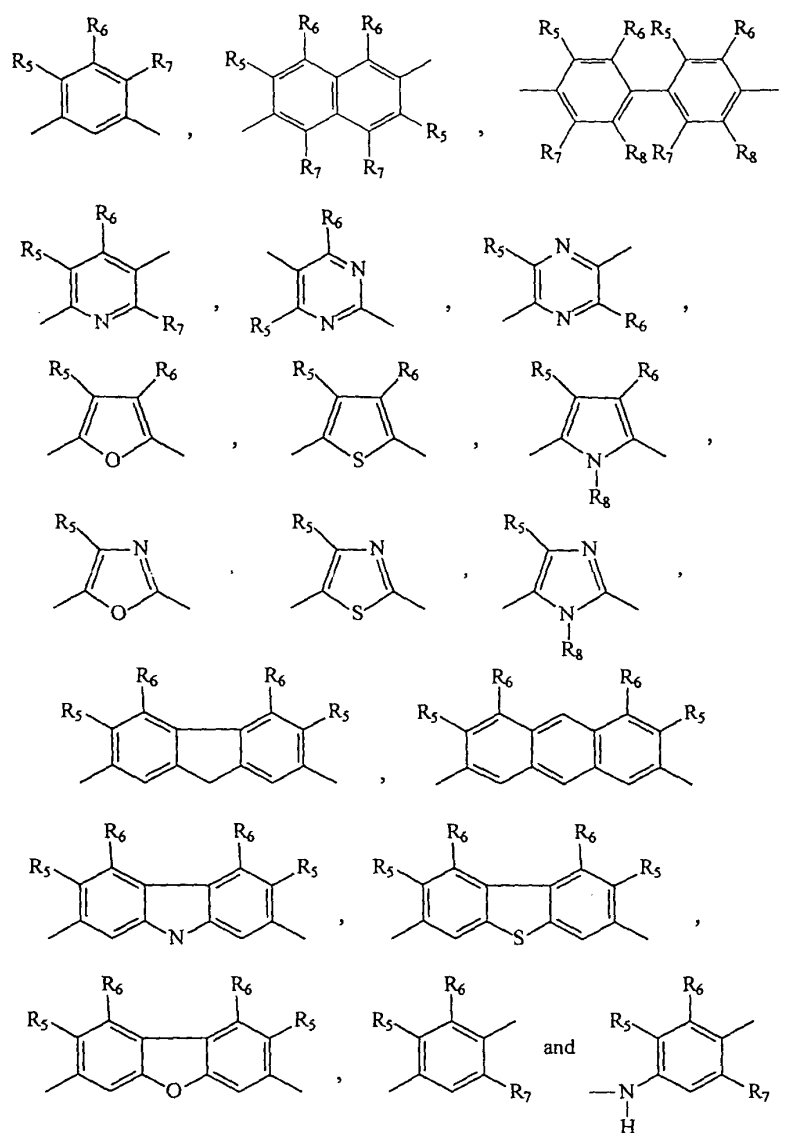
R₂ and R₉ are each independently selected from the group consisting of H, H₂, hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

R₃, R₄, R₁₃ and R₁₄ are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R₃ and R₄ together or R₁₃ and R₁₄ together represent a C₂ to C₁₀ alkyl, hydroxyalkyl, or alkylene, or R₃ and R₄ together or R₁₃ and R₁₄ together are:



wherein n is a number from 1 to 3, and R₁₀ is H or -CONHR₁₁NR₁₅R₁₆, wherein R₁₁ is lower alkyl and R₁₅ and R₁₆ are each independently selected from the group consisting of H and lower alkyl;

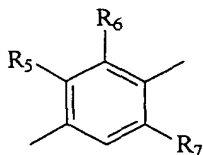
L is selected from the group consisting of:



wherein R₅, R₆, R₇, and R₈ are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl; and wherein said compound of Formula I binds the minor groove of DNA as a dimer;

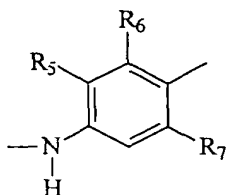
and then observing fluorescence in the sample, the observation of fluorescence indicating the compound of Formula I has bound to a sequence of DNA.

8. The method of Claim 7, wherein L is:



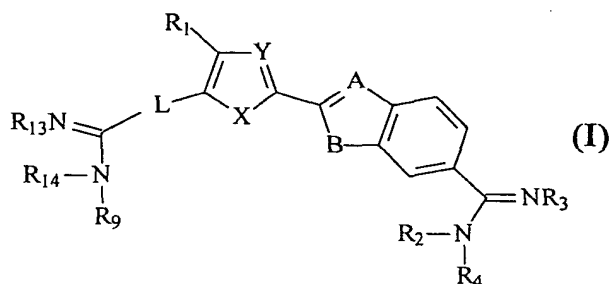
A is N, B is NH, X is O, Y is CH, R_1 , R_2 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 and R_{14} are each H, and R_3 and R_{13} are each H_2 .

9. The method of Claim 7, wherein L is:



A is N, B is NH, X is O, Y is CH, R_1 , R_2 , R_4 , R_5 , R_6 , R_7 , R_8 , R_9 and R_{14} are each H, and R_3 and R_{13} are each H_2 .

10. A pharmaceutical formulation comprising a compound of Formula I:



wherein:

X is selected from the group consisting of O, S, and NH;

Y is CH or N;

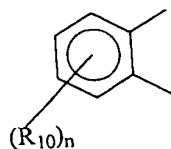
A is CH or N;

B is selected from the group consisting of NH, O or S;

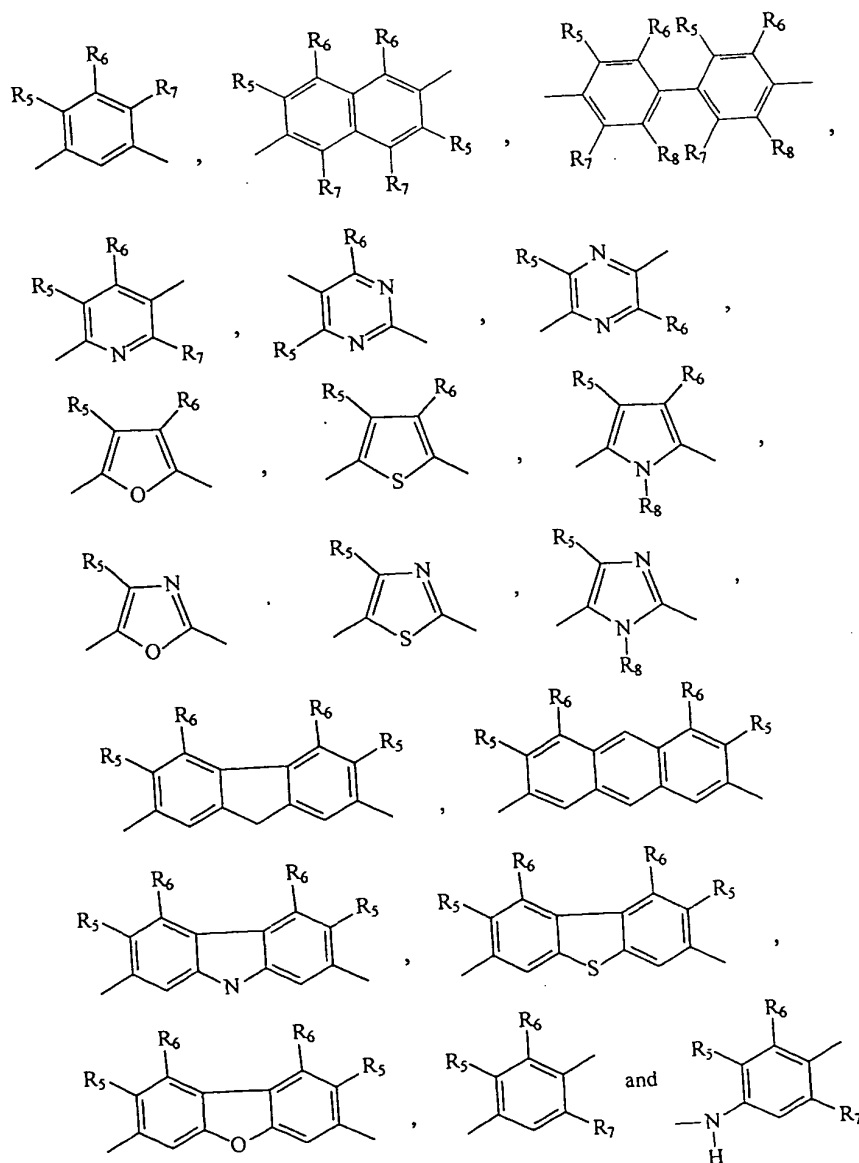
R_1 is selected from the group consisting of H, loweralkyl, halogen, oxyalkyl, oxyaryl, and oxyaryllakyl;

R_2 and R_9 are each independently selected from the group consisting of H, H_2 , hydroxy, lower alkyl, cycloalkyl, aryl, alkylaryl, alkoxyalkyl, hydroxycycloalkyl, alkoxycycloalkoxy, hydroxyalkyl, aminoalkyl and alkylaminoalkyl; and

R_3 , R_4 , R_{13} and R_{14} are each independently selected from the group consisting of H, lower alkyl, alkoxyalkyl, cycloalkyl, aryl, alkylaryl, hydroxyalkyl, aminoalkyl, and alkylaminoalkyl, or R_3 and R_4 together or R_{13} and R_{14} together represent a C_2 to C_{10} alkyl, hydroxyalkyl, or alkylene, or R_3 and R_4 together or R_{13} and R_{14} together are:

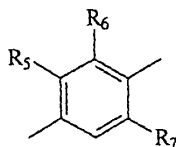


wherein n is a number from 1 to 3, and R_{10} is H or $-\text{CONHR}_{11}\text{NR}_{15}\text{R}_{16}$, wherein R_{11} is lower alkyl and R_{15} and R_{16} are each independently selected from the group consisting of H and lower alkyl;
 L is selected from the group consisting of:



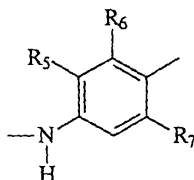
wherein R₅, R₆, R₇, and R₈ are each individually selected from the group consisting of H, alkyl, halo, aryl, arylalkyl, aminoalkyl, aminoaryl, oxoalkyl, oxoaryl, and oxoarylalkyl;
in a pharmaceutically acceptable carrier.

11. The pharmaceutical formulation of Claim 10, wherein L is:



A is N, B is NH, X is O, Y is CH, R₁, R₂, R₄, R₅, R₆, R₇, R₈, R₉ and R₁₄ are each H, and R₃ and R₁₃ are each H₂.

12. The pharmaceutical formulation of Claim 10, wherein L is:



A is N, B is NH, X is O, Y is CH, R₁, R₂, R₄, R₅, R₆, R₇, R₈, R₉ and R₁₄ are each H, and R₃ and R₁₃ are each H₂.